

# ISO Rules

## Part 300 System Reliability and Operations

### Division 304 Routine Operations

#### Section 304.3 Wind and Solar Power Ramp Up Management



#### Applicability

**1(1)** Subject to subsections 1(2) and 1(3), Section 304.3 applies to:

- (a) the **legal owner** of a wind or solar **aggregated generating facility** that:
  - (i) is directly connected to the **interconnected electric system** or to an electric system within the service area of the City of Medicine Hat, including a wind or solar **aggregated generating facility** situated within an industrial complex that is directly connected to the **interconnected electric system** or to an electric system within the service area of the City of Medicine Hat; and
  - (ii) has a **gross real power** capability greater than or equal to 5 MW;
- (b) the **operator** of a wind or solar **aggregated generating facility** that:
  - (i) is directly connected to the **interconnected electric system** or to an electric system within the service area of the City of Medicine Hat, including a wind or solar **aggregated generating facility** situated within an industrial complex that is directly connected to the **interconnected electric system** or to an electric system within the service area of the City of Medicine Hat; and
  - (ii) has a **gross real power** capability greater than or equal to 5 MW; and
- (c) the **ISO**.

**(2)** The provisions of this Section 304.3 do not apply to the **legal owner** of a wind or solar **aggregated generating facility** that was energized and commissioned after April 7, 2017 and that is identified by its **pool asset** description in an exemption list the **ISO** publishes on the AESO website.

**(3)** The provisions of this Section 304.3 do not apply to the **legal owner** of a wind or solar **aggregated generating facility** that was energized and commissioned:

- (a) prior to April 7, 2017; or
- (b) that is included in the exemption list referenced in subsection 1(2) in accordance with a previous technical requirement, technical standard, **ISO rule** or functional specification;

but the **legal owner** of such an existing wind or solar **aggregated generating facility** must remain compliant with the ramp up management requirements set out in that previous technical requirement, technical standard, **ISO rule** or functional specification

**(4)** Notwithstanding subsection 1(2) or 1(3), if any of the **aggregated generating facilities** described in subsections 1(2) or 1(3), undergoes one or more:

- (a) facility additions after April 7, 2017 resulting in an increase in the cumulative **gross real power** capability of the wind or solar **aggregated generating facility** by an amount greater than or equal to 5 MW; or
- (b) equipment replacements after April 7, 2017 where the equipment replaced has a **gross real power** capability greater than or equal to 5 MW irrespective of whether the cumulative **gross real power** capability of the wind or solar **aggregated generating facility** is increased;

then the entire wind or solar **aggregated generating facility** will be subject to, and the **legal owner** of the wind or solar **aggregated generating facility** must comply with the provisions of this Section 304.3.

**(5)** The **ISO** may, notwithstanding subsections 1(2), (3) and (4), require the **legal owner** of a wind or solar **aggregated generating facility** to comply with any one or more specific provisions or all of the

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provisions of this Section 304.3, if the **ISO** determines that such compliance is necessary for the safe and reliable operation of the **interconnected electric system**.

#### Requirements

##### Functional Specification

**2(1)** The **ISO** must, in accordance and generally consistent with this Section 304.3, approve a written functional specification containing details, work requirements, and specifications for the design, construction, and operation of a wind or solar **aggregated generating facility** and associated **transmission facility** connection facilities.

##### Real Power and Ramp Rate Limitations

**3(1)** The **legal owner** of a wind or solar **aggregated generating facility** must ensure that the facility has the control capability to limit the **real power** output at the **point of connection**, or at the connection to the **electric distribution system**, in accordance with any limits or instructions contained in any **directive**.

**(2)** The **legal owner** of a wind or solar **aggregated generating facility** must ensure that the **real power** control limit referred to in subsection 3(1) is adjustable from the minimum operating output to the **gross real power** capacity at an average resolution of 1 MW.

**(3)** The **legal owner** of a wind or solar **aggregated generating facility** must, when a **real power** control limit is in effect, ensure that the 1 minute average **real power** output does not exceed the **real power** control limit specified in the **directive** referred to in subsection 5(1) by more than 2% of the **gross real power** capability.

**(4)** The **legal owner** of a wind or solar **aggregated generating facility** must ensure that the facility is equipped with ramp rate limiting controls that are:

- (a) capable of limiting the ramp up of the **real power** of the wind or solar **aggregated generating facility**; and
- (b) adjustable such that the **ramp rate** does not exceed, in MW per minute, a range from 5% to 20% of the **gross real power** capability.

**(5)** The **legal owner** of a wind or solar **aggregated generating facility** must ensure that the default setting for the **ramp rate** limiting controls referred to in subsection 3(4) is set at 10% of the **gross real power** capability.

**(6)** The **legal owner** of a wind or solar **aggregated generating facility** must ensure that any difference between the **real power** at:

- (a) the **point of connection** or the connection to the **electric distribution system** of the wind or solar **aggregated generating facility**, and
- (b) any **collector busses** of the wind or solar **aggregated generating facility**,

is compensated for in the **real power** limiting and **ramp rate** limiting controls.

##### Calculation of the Alberta System Wind and Solar Power Limit

**4(1)** The **ISO** must calculate, at a minimum monitoring interval of every 20 minutes, an Alberta system wind and solar power limit for wind and solar **aggregated generating facilities**.

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#### Calculation and implementation of the Wind and Solar Aggregated Generating Facilities Power Limit Pro Rata Share

**5(1)** The **ISO** must, by means of supervisory control and data acquisition signals, issue **directives** to the **operator** of each wind or solar **aggregated generating facility** that includes their power limit pro rata share.

**(2)** The **ISO** must optimize the pro rata share **directive** described in subsection 5(1), including reallocating any amount that results in a wind or solar **aggregated generating facility** exceeding its **maximum capability**.

#### Methodology Used to Calculate the Alberta System Wind and Solar Power Limit and the Wind and Solar Aggregated Generating Facilities Power Limit Pro Rata Share

**6(1)** The **ISO** must post the methodology used to calculate the Alberta system wind and solar power limit and the methodology used to calculate the Alberta system wind and solar **aggregated generating facilities** power limit pro rata share to the AESO website.

**(2)** The **ISO** must notify market participants at least 30 days in advance of amending the methodologies referenced in 6(1) coming into effect.

#### Revision History

Date	Description
2021-03-19	Completed administrative amendments to align with red tape reduction goals and ISO drafting principles; corrected typographical errors; and simplified provisions. Consolidated sections 3(4), 3(5), 5(2), 6(1) and 6(3). Removed subsection 3(4), 3(5), 4 and 6(2).
2019-12-11	Removed duplication with new Section 103.14, <i>Waivers and Variances</i> ; standardized functional specifications language; capitalized references to "Section"
2018-09-01	Revised the applicability section to include solar aggregated generating facilities and to apply to an aggregated generating facility that has a gross real power capability equal to or greater than 5 MW; added real power and ramp rate limitations requirements; revised the requirement to issue a power limit pro rata share from when a predetermined criterion is met to at the start of each monitoring interval; removed the methodologies used to calculate the Alberta system wind power limit and pro rata share; added subsection 7; revised subsection 4 to allow the energy market merit order provisions of the ISO rules and pro rata share to occur concurrently; and administrative amendments.
2015-04-01	Rule references have been updated in subsection 5(1)(a)
2015-04-01	The words "or dispatch" were added in subsection 5(1)(b).
2013-01-08	Previously defined terms have been un-defined and the words have been un-bolded.
2011-12-01	Initial release.